PERSONNEL

Journal

The Magazine of

LABOR RELATIONS AND PERSONNEL PRACTICES

Published by PERSONNEL RESEARCH FEDERATION
Lincoln Building, 60 East 42nd Street, New York City

Volume 20 *Number 5*

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"Labor is Securing Increased Representation in the Government's Planning and Administrative Councils. Similar Representation on the Industrial Level Can Have Even More Far-reaching Effects in Ensuring the Success of the Nation's Efforts."

Unions Fight—*for* What?

By Charles S. Slocombe
Personnel Research Federation
New York, N. Y.

Some few days before the evacuation of the British army at Dunkirk, fishermen in a small village on the east coast of England were asked to get all available boats ready to put out to sea for some unknown destination, at a moment's notice.

They set to work preparing their boats. One was stuck high and dry on the beach, left by the falling tide. So they sweated and fussed all afternoon digging a trough in back of it, so they could pull it down into the water. Finally they got the fire department to come down and wash away the sand and gravel behind it, and got it out.

A Crack at Hitler

The whole village was roused to a tempest of activity. Wives baked huge stacks of pies and cakes for their menfolk to take with them. Weapons, sticks, pitchforks, gaffs and harpoons of the most ancient and rudimentary sort were collected.

Bearded old sailors of eighty and ninety, and hairless urchins of eight and nine all got excited and joined in the preparations, because they thought that at last they were going to have a chance of taking a crack at Hitler. They were sure they could beat him, no matter how many tanks, cannon, bombers and fortifications he might have.

They waited and waited for orders to sail, for what purpose or where they did not know or care, so long as it gave them a chance at Hitler.

But through some slip up in the Admiralty, they were forgotten, never notified to sail, and the evacuation of Dunkirk accomplished without them.

The most tragic aspect of this little incident is not that they were finally forgotten, but that it typifies a condition that is all too prevalent, in which there are many loyal, well meaning, but incredibly ignorant people wanting to do something about this war, and not being allowed to.

Troubles with Defense Jobs

THERE are unconfirmed stories by reliable people in this country of similar seemingly unavoidable wastes of energy in defense industries.

In one case a young man came back for a job to a non-defense company, which he had left to go into a defense industry. His reason was that he could not stand the amount of loafing he had to do. In another case a youth complained to the local public library because they would not let him take out more than two books a day. He took these to work, but finished reading them by the middle of the afternoon, and wanted a third to finish out the shift.

In another case a youth wanted to quit his job after four days. During this time he had drilled only four holes, and put in four bolts—he was required to stay and work overtime. That was all he could find to do, and he was sick of it. In another case a university graduate got a job as an inspector of incoming raw materials at $180 a month. After a week he wanted to quit because work took only one half hour a day, when shipments came in, and he couldn't stand loafing around the rest of the day.

We are not interested in any criticism of the British Admiralty, that did not use the fisherman, nor the managements of the American defense industries where these boys cannot find enough to do.

The Dunkirk evacuation was a rapidly improvised move, in which there was likely to be quite a few oversights. And the rapid expansion of some of our defense industries has not given organization a chance to catch up with problems of production planning, supply of materials, and work assignments.

The Union Urge to Help

THE same sort of problem does however arise in larger areas, where it is vastly more important, and serious. With the growth of large unions in this country, as in England, the problem arises as to what is to be done with their strong urge to use the organized loyalty and ability of their members and officers in the national interest.

Even before the war, we had the Steel Workers' Union working out plans for labor-management cooperation for increased efficiency. They are still at it. The Auto Workers have also put forth plans for speeding up defense production. So have unions in the dress and clothing industries, and the textile workers, in regard to the conversion of silk mills.

On the Pacific waterfront, where over the course of years, the amount of cargo

loaded and unloaded has continued to decrease, the unions now say they want to reverse this policy, and join with management in increasing their work. But so far there has not been found a way of developing the necessary union-management cooperative machinery.

Perhaps some of these changes of heart on the part of unions have come about since the entry of Russia into the war. But many of the union proposals for cooperation came before then. The timing is relatively unimportant. The important point is, "What can be done about it, by management?" "Or by Government?" "Or by Unions?"

What shall be the function and place of these unions in the industrial picture, now during the war, and after. They, or many of them, have gone beyond the stage where they are occupied with getting new members, and keeping them, battling for higher wages and better working conditions, and fighting for recognition.

What Unions Can Do

To limit their work to these functions seems absolutely impossible. Even if it were possible, it would mean continual restlessness and conflict. By the very necessity of evolution they must take on other functions.

The possible extensions of their activites that are seen at present are:

Taking care of the social needs of their members, who through limited income are not able to afford proper recreation, vacation and health services. The International Ladies Garment Workers' Union has pioneered in this type of union development. It seems definitely a proper function of a union.

Union-Management Cooperation

Entering more and more into the administrative and managerial problems of business and industry. This is what some of the unions, such as steel, motors, clothing and textiles have seemed to want to do.

Their efforts in this direction have not, in general, been encouraged by the larger companies. There are many reasons for this—and perhaps, without being unjust to unions—we may think that a distrust of their competence is the main one.

While they are more intelligent than the English fisherfolk who wanted to fight Hitler with billyhooks, there are still many things they do not know about business management.

So far then their efforts have been limited to helping the smaller, perhaps less efficient marginal units in some industries. Perhaps it is to this limited field that they should confine their efforts, while they are serving an apprenticeship in business management.

The third possible extension of their efforts might be in the direction of organized political activity. While this has taken place to a certain extent, it has not yet progressed far, in this country.

This may take either of two forms; the setting up of a definite labor party, financially backed by trade unions, as has existed in England for many years, or the unions here entering into, and influencing regular machine politics, as has been the pattern so far developed.

Union Representation on Governing Boards

IN ENGLAND, since the Churchill government came in, there has been a new interesting development of union activity; that is the representation of unions on almost all boards and governing committees, either in an administrative or consultative capacity. They deal with such matters as labor supply, munitions production, food regulation, etc.

In America we have a much more limited application of this principle, on wage boards, mediation boards, etc. The AFL-CIO split is undoubtedly responsible for our more limited application.

However that may be, and however it may be resolved, it may be taken as certain that this country cannot avoid a continuance of labor strife, and internal dissensions regarding price and wage policies, nor come to a truly all-out defense effort, without some more extensive representation of labor in the direction of our national affairs.

That, at least, is the lesson that may be learned from English experience in the present war. England's national solidarity today, as contrasted with the internal dissensions and strife and production inefficiencies, of the last war point this up very clearly.

Present Arrangement not Representative

SIDNEY HILLMAN, with his corps of assistants, largely $1 a year men on the payroll of industrial corporations, with a salting of liberal minded economist professors, of course, does not represent American labor unions.

It rather represents a continuing insult to them—for they have union men in their employ who are as capable as any the industrial corporations have been willing to release, and who would really represent labor's point of view. So long as this set up lasts, it only serves to intensify the unions' disgust with present affairs, and their refusal to cooperate with and aid in continuing the blunders at present being made in the defense production situation.

Before the war is over, of course, this situation will be changed.

The possible manner and means of bringing about a change may perhaps be better understood by the reading of a book recently published in New York, by two English Unionists, called curiously "Trade Unions Fight—For What?". It protrays the dual problem that has faced English unions for the past seven years. By analogy, it pictures two of the many problems with which American union leaders are faced today, and which industrial relations men should be working on.

Union Attitude towards War

THE English unions, through their central body, the Trades Union Congress had apparently been urging the government ever since 1934 to prepare for the Hitler menace. They had little success in this.

When the war finally broke out they passed a resolution favoring England's entry into the war. They refused however to help the Chamberlain government in the early stages. Not until Churchill came in did they agree to cooperate, and have their representatives in the government.

The unions favored the war, but were very conscious of the fact, derived from their experience with the Chamberlain government, that the war might be lost because the government might not prosecute it with sufficient energy and intelligence. Labor therefore wanted to be in the government, and on the various boards to energize them.

Troubles with Government Departments

THIS they did not find easy with the various departments, who under the traditional English civil servants, wanted to proceed in their usual leisurely way. When the unions finally got in to find out what was happening, they found that, for instance, to speed up munitions production the country had been split up into thirteen districts, each under the direction of a retired rear admiral, who knew nothing of modern production problems.

In the matter of labor supply, they found this being handled by the Labor Department with 5000 people in London, and only 100 out in the country trying to get things done.

So instead of fighting employers, unions joined with employers in fighting the lassitude of the government departments.

Another reason for the insistence of labor representation on government boards was the knowledge which union leaders had of the psychology of their own members. They knew that workers would have to submit to a "reduction of labor standards"; to controlled wages; to food rationing; being frozen to their jobs in many cases; in others ordered to take jobs, instead of freely selecting them; etc.

Independence of Union Members

THE union leaders knew that their members were so independent that they would not be ordered about by industrialists, or by a government largely influenced by industrialists, and their $1 a year representatives. The leaders knew that, even in the face of the nation's danger, there would be a constant internal squabble, if the age old fight between management and workers was not bypassed for the emergency.

So by assuming the responsibility of representation in the government, they became in a position to persuade their members to agree to the hardships necessary in the prosecution of the war. When they undertook this responsibility, they knew

it was not a light one, for English unionists do not always follow their leaders, any more than they do in America.

If a leader gets too far away from the ideas of his people they often refuse to follow him. The English union leaders have had to move their people along pretty fast in the last two years, and have not had an easy time doing so.

English union leaders, big and small, are now having their first real taste of participation with industrialists and government officials in the administration of local, district and national affairs. And they are learning that the problems are entirely different from fighting about wages, hours and working conditions, or drawing up theoretical plans as to how industry or the country should be run.

Future of Unionism

This is causing many of them to wonder about the future of unionism, and the constructive part it can play in the development of a nation. So comes the question "Trade Unions Fight (Hitler)—For What?"

English unions, though they have never directly admitted it, have always been strongly influenced by Fabian philosophy, looking toward an eventual and seemingly inevitable socialization of industry by some means or other. The influence of the writings of Shaw, Bertrand Russell, Bennett, Wells, Tawney and Laski has been very strong. (The Wisconsin LaFollettes are the main representatives of this school of thought in this country.)

But while perhaps some of them have thought a lot about this, little direct action has resulted; partly because they have not been able to figure out a way of bringing it about; partly because they could not afford to get too far ahead of their members, who are mainly ignorant of these matters, and partly because they have seen the disappointing results of socializing efforts in other countries, and are aware of the extreme dangers involved in the process.

The net results of their efforts have been the financial backing of and electioneering help to a political labor party. This party has aided in the passage of social security and health legislation, and the adoption of the Fabian principle (now almost worldwide) of redistribution of wealth through taxation.

What to Do about Socialization

They have deplored the setting up by "Socialist Ministers" of bureaucratic government controlled public utility corporations such as the London Passenger Transport Board and the Central Electricity Board, as a form of socialization which they do not like, particularly when there is no provision for labor representation.

But the problem of what to do about socialization has so far stayed with them. It may be that their current experiences in participating in the active details of administration, with others, will cause them to revise their views on this subject, it's desirability as an ultimate outcome, and ways and means of bringing about some substitute for it.

Foreign Failures

IN THEIR analysis of the Russian situation they see how, while the initial objective was to place the control of production in the hands of workers, the final result has been to give them less say in directing production and influencing wages and working conditions than they had under the Czars. This is primarily because Russian workers know so little of the problems of organization involved in production. They are too much like the English fisherfolk.

Then they look at the attempts to set up collective economies in Republican Spain and Catalonia, before the Franco revolution, and the developments of union control of railroads and oil in Mexico. They do not like the results at all.

They are also unimpressed by the labor banking movement that Sidney Hillman tried once, and by the "Plumb Plan" once accepted by American Railroad Brotherhoods and the AFL as a solution of our railroad problem. They are equally unimpressed by the way in which the cooperative movement has developed in England and elsewhere.

So the Chairman of the English Trade Union Congress appears to feel that though the present program of their unions, of cooperation with industry and government with a reasonable amount of representation, is called a "timid and tentative exercise of union authority" they had best let it go along that way till they know how to progress to another stage.

Reorganization of Union Movement

HE SAYS that there must be a considerable reorganization of the English trade union movement; with some resolution of the craft versus industrial unionism situation; an education of their members so that they understand national and industrial problems better; an education of them so that they are not constantly urging their leaders to get improved conditions, at the expense of the public and their fellow workers. He regards as having a beneficial influence, the affiliation with the Trades Union Congress in recent years, of the Bank Officers' Guild, the Medical Practitioners, the Guild of Insurance Officials, the National Union of Journalists and the Union of Navigators and Engineering Officers.

If the authors of this book in any way represent the views of union leaders in England, we may not expect to see any tendency towards socialization in England after the war. Nor may we expect to see any increase in bureaucratic new deal centralization of authority, such as has been taking place in this country, and an increase of which is feared.

Basic Problems of Unions and Employers

THERE will probably be an increase in central and local joint efforts at cooperation between employers and unions, possibly having as one of its objects, resisting encroachment by the government.

But basically, the problem of the union leaders is one of educating their members. For the applecart will be upset if there are left wandering about, as there are now in the CIO unions of this country, any substantial number of workers with a psychology similar to that of the fisherfolk, well-meaning, energetic, ambitious, ignorant, but easily capable of developing a pathological slant through continued frustration.

Basically the problem of employers is to enter into cooperative relationships with unions as rapidly as union leaders show, by their democratic management of their unions, and their intelligent understanding of industry and production problems that they can help rather than hinder. In this respect, it should be remembered that unions, like children, learn by doing—a statement made with due apologies to unions for the comparison.

A commentary and review of the book "Trade Unions Fight—For What?" by Herbert Tracey. 1941. Chemical Publishing Company, Brooklyn, N. Y., pp. 222. Price $2.00.

Often the Only Time the Personnel Department Sees an Employee is When He is Hired. The Department's Knowledge of Him for the Next Forty Years of His Working Life with the Company is Often Derived Solely from Paper Slips Showing Ratings, Promotions, Etc.

Selecting Employees *for* Advancement

By Lynn B. Drury

C and H Sugar Refining Corporation
Crockett, Cal.

The selection of the best qualified man for the job and a chance at a desired job for every employee is a major personnel problem, the solution of which exerts tremendous influence on operating efficiency and personnel morale.

As a background to outlining our solution, we employ approximately 1,700 workers in five major departments with an annual labor turnover of from six to eight per cent for the past ten years, practically all in the lower wage brackets. We operate on three shifts which are rotated every two weeks with seventy per cent of our employees so employed. In addition, our apprentices in ten crafts are selected from our operating employees.

New Agreement Covering Promotions

The low rate of turn over means that many potentially capable men are more or less frozen into routine jobs.

In common with the average concern, the "mental file" system of selecting employees for advancement or transfer to other departments was formerly used, with the average percentages of success and failure and the usual grapevine rumors of favoritism, etc.

The shortcomings of this system were recognized by both management and labor, culminating in the inclusion of the following clause in our 1938 contract with the union.

> ". . . The Employer, when promoting employees shall give due consideration to (1) individual merit, (2) physical, moral and mental capacity and general fitness, (3) length of service with the Employer and (4) American

citizenship. Whenever employees have equal qualifications for promotion, the employee having seniority shall have preference.

When vacancies occur in occupations paying —— or over for men, or —— or over per day for women, the Employer agrees to post notice thereof on the bulletin board, except on jobs where regular relief operators are in existence. In these cases, the regular relief operator will be advanced to the vacancy, and notice posted for the position of relief operator whenever, in the opinion of the Management, such relief is needed. Where there is more than one relief operator on each shift, the relief operators shall be advanced in the order of their selection. Written applications may be made to the Personnel Department by employees seeking transfer or promotion to such vacancies and due consideration will be given to such applications."

Through a period of refinements a standard form of job posting has been adopted, and application blanks are supplied to applicants by the personnel office.

Name and work number of each applicant are recorded at the time the blank is requested, and when the application is turned in a receipt at the bottom of the form is detached, signed and given to the employee. These precautions are taken to avoid any controversy over lost applications or other irregularities.

Seniority Age and Rating

After the expiration date for filing, which normally allows five working days from time of posting, the applicants are listed in order of seniority, noting hired dates, ages and ratings.

This latter is the rating given each worker by his foremen on 11 to 15 attributes covering his work and personal qualifications. Our station foremen are reverse rotated on shift every six weeks, so that the majority of our employees are rated by three foremen, never less than two, and the results averaged to obtain an impartial figure. The separate ratings are reviewed and commented on by the department head involved, before going to the personnel office and becoming a part of the employees permanent record. The results of each bi-yearly rating are entered on a master sheet for comparison.

Incidentally, every employee has the privilege of seeing his averaged rating, and talking it over with his supervisor. An important product of this system has been a marked increase in job efficiency on the part of many.

In the lower bracket jobs advancement is made on the basis of seniority and job performance as shown by the rating of the individual. A poor rating is considered as sufficient cause for rejecting applicants for promotion.

Tests for Higher Brackets

In the higher brackets and for transfer to other departments, intelligence and aptitude tests have been employed since May of 1940 with extremely gratifying results.

The first use of such tests was in selecting clerical workers by means of various Otis, Thurstone and Terman forms, but in March of this year we were confronted

with 75 applicants for 5 mechanical apprentice jobs, and the need for a systematized method of picking such trainees was realized. This was emphasized by the realization that under present economic conditions we should pick men with the highest possible capacity to make rapid advancement, due to the possibility of losing some of our trained mechanics to defense industries.

Engineering Department Tests

Our Engineering Department devised a series of weeding out tests, and a second all day test for their final selection. At the same time the Personnel Department made a survey of mechanical aptitude tests, finding the Minnesota forms apparently the best adapted to the task at hand.

Using the Otis Test of Mental Ability and Minnesota Paper Form Board we conducted a 40 minute test of the 18 applicants that had survived the preliminary test, and when results were tabulated the numbers one, two and three men were the same in our tests and in the Engineers all day examination. Further, the first eight were the same with some difference in ranking below the first three.

On the basis of these results the Engineering Division withdrew from future testing in favor of the Personnel Department.

Later, several of the applicants rejected by the first mechanical test were given the paper tests as they made application on new job postings, made acceptable grades and after transfer to a craft have proven considerably above the average.

The explanation appears to be that the tests devised by the Engineering Department, in common with several other tests in general use, measured whatever training the applicant had had, instead of the natural mechanical ability gauged by the Minnesota Form Board.

Selections by Personnel Department

Selection of applicants is made by the Personnel Manager and department head involved based on acceptable ratings in the tests used, past job performance (as demonstrated by the rating) and seniority. In the case of transfers to the various crafts the foreman is given the opportunity to interview several acceptable applicants, with the understanding that the Personnel Department's number one selection is to be accepted, unless there is a valid reason for his rejection.

While we do not have sufficient data to validate our findings, all indications are that the system is highly successful as regards selectees and our foremen and various department heads have become sold on the procedure, even to the point where protest has been made when tests were not employed for a very temporary job.

From the standpoint of the employee there is no system that will make an unsuccessful applicant happy but he does have, under our plan, the knowledge that his application had full attention and he can be shown, on paper, why he was not selected.

At the start of the testing program considerable suspicion was encountered. The greater part of this has disappeared and we now have employees, including foremen themselves, requesting opportunities to be tested, although there is a minority group still opposed to the procedure.

From the standpoint of the personnel office the benefits are several, one of the most important being the uncovering of unknown aptitudes, and placing of men where they are likely to be of most value to the company, and attain the highest degree of personal success.

Improved Job Placement

Several employees with service in our operating department ranging up to 12 years, and dissatisfied with their progress have shown through the medium of tests a high degree of natural mechanical ability, coupled with the requisite intelligence level, have been transferred to a mechanical craft, and are now satisfied workmen doing good work of a type to which they are adapted.

In one case a man with 12 year's service, during which period he was tried on various jobs in three non-mechanical departments, and who was slipping to a low level through his inability to get anywhere, was transferred to the carpenters, where he is outstanding as an apprentice and has expressed himself as being really satisfied for the first time since entering our employ.

Another employee, 43 years old with five years varied experience in our Operating Department, had made several requests for a transfer to the sheet metal craft with no success. His ratings in the tests won him the transfer, and at the present time he is establishing an enviable record.

Remedial Study of Case

In a case where there was a suspicion of a man not having shown to best advantage at a previous trial in our machine shop an exhaustive study was made, showing that he had considerably above the average natural ability but that at the time of the trial certain outside factors worked against his success.

His foreman had reported a decided lack of initiative and ability to keep his mind on the job, together with interference by his father who is an outstanding specialty mechanic. Investigation brought out that at the time the young man was engaged to be married, and in the throes of an emotional disturbance, in addition the strong Vocational Interest Chart gave the information that his level of occupational aspiration was low.

On the strength of his ratings in the aptitude tests the mechanical department agreed to another trial; the complete picture was given to the employee and the father advised not to "mother" the boy, in the plant at least. The case has worked out satisfactorily up to the present time, and the young man appears well on the way to becoming a skillful machinist.

Retest Results

THROUGH the medium of retests efforts at self improvement along some lines can be gauged, mainly in the study of mathematics which appears to have a certain accelerating action on the general thinking process of individuals engaged for comparatively long periods in purely routine and in repetitive work.

The tester is enabled to feel certain trends of thought among the employees, and to promote a better feeling towards management through the medium of informal talks to small groups of testees. Such talks, preliminary to administering the tests, originally designed to put the applicants at ease, have developed into question and answer sessions of extreme value. In a sense they are a type of post-hiring interview giving an opportunity of studying personnel in an entirely new light.

Eventually the procedure will yield valid data on relationships between intelligence and aptitude levels, and training costs and efficiency, which in itself will justify the time and expense of conducting the tests.

At the start tests were administered in what appears to be the orthodox method, i.e., the intelligence test first with the others following.

Necessity for Retests

AS WE went deeper into the subject, retests were made on a number of employees, resulting in about 30% making better intelligence ratings on the second test, contrary to the belief of psychologists that the individual intelligence levels remains the same.

So experimentation and a study of the results were made, which convinced us that when the testee is recently out of school, where he has been used to examinations and paper work, the results of mental ability tests normally remain at the same level.

But in the case of a person who has been employed for some time on a routine factory job, an allowance must be made for the lack of recent familiarity with tests and paper work, and a general retest administered, which will give a more accurate picture of the abilities of the employee.

Buffer Tests

WE now use a 30 minute arithmetic examination as a "buffer" test or nerve settler and brain "warmer upper," followed by the aptitude tests and concluding the session with the intelligence form. This method appears to set the applicants at ease, and put their minds in gear with closer correlation between the first and subsequent tests.

In administering the subsequent examinations we endeavor to use alternate forms comparable in scoring.

Repeating what we have previously stated, these "findings" are as yet unvalidated, and perhaps should be labeled our impressions, but the fact remains that we have so far selected clerical and stenographic employees, transferred men to various mechanical crafts and to our Technical Department, as well as selecting foremen for various important stations with a reasonable record of success.

American Labor Can be Rallied to the Cause of the Nations Fighting Hitler by Full Recognition of Its Economic Rights and by Utilization of its Creative Contributions to Our National Defense Program.

Trouble *in* The Mines

By Elmer Rowe
Butte, Montana

What is wrong with management in the mining industry? Why is there so much unrest and dissatisfaction in the ranks of the employees in the mines? Why cannot the employers and employees effect a more perfect consonance when the world situation almost demands a unanimity of purpose which has never been approached previously?

Executive Ability in Mine Management

There are a number of reasons why these questions have not been disposed of permanently. Labor has its full quota of faults. State and national legislatures seem to be determined to enact more pro-labor legislation than industry as a whole, and particularly mine management, can keep up with. However, in the interest of brevity, these matters will not be discussed here, except to admit that they do exist, and that they should be corrected as quickly as possible.

If it could be proven that management of the mining industry lacks executive ability there would be nothing more to be said on the subject. But management does possess this ability. Some of the best brains in this country are directly connected with the industry. That is the cause of the paradoxical situation that exists in the mining industry. Granting that mine management is capable of better things, why are employer-employee relations so generally unsatisfactory? Why has not management pointed the way to mutual understanding and cooperation between itself and the miners?

Frankly, the writer is unable to understand why the situation exists. Many of the causes of faulty labor relations are readily apparent, but why they have been

permitted to retard the healthy growth of the industry is a question which, in many instances, management alone can answer. All the writer can do is to enumerate a few of the causes, and then put the matter squarely up to management to accept, and do something about it, or to reject and let nature take its course.

Complete About Face

ONE of the most prolific causes of employee dissatisfaction and resentment lies in the treatment accorded the men by their immediate supervisors, the shift bosses. The great majority of these bosses were promoted from the ranks of the miners. Most of them are entirely familiar with the problems and vicissitudes with which the miners must contend. The bosses themselves once had to face the same conditions. But it is a constant source of surprise to note the dexterity with which these men can do an almost complete about-face and do the self same things they so very recently had complained about in the supervisors who had been over them.

One encounters a great many different types of bosses in the mines. There is the hard boiled "rawhide" type; the glum sullen type; and the cantankerous type. Others are fretful and plaintive. Some are perpetually worried or eternally dissatisfied. Many are chronic "buck passers," and quite a few are accomplished "yes men." In short, every one of the diverse types of human personality are represented in the supervisory staff of the average mining company.

The Hard Boiled Boss

UNDER a "hit or miss" system of mine management this condition is inevitable. But if top management must possess an unusual quality of leadership, so also should the supervisory staff possess the same grade of leadership, except that it need not be of the same high standard. And frankly, there is only one type of person who can attain any marked success in any supervisory position, and that is the executive type. All of the various types mentioned in the last paragraph are entirely unsuited to handle men with a minimum of friction.

By the executive type it is meant the man who can be impartial without being coldly impersonal. The man who can be square with everyone. The man who realizes that while some of his men have to be pushed, so to speak, in order to get their work done, the majority readily respond to courteous treatment and human consideration. A hard boiled boss may be able to "ride" a certain percentage of the men, but the kind of miners the mining industry needs the most is the kind who have sufficient self respect and self reliance to resent this sort of treatment. Such men refuse to tolerate this type of boss, and generally keep moving until they find a boss who will accord them the consideration they rightfully demand.

Some mining companies use the trial and error method of selecting shift bosses. A miner is promoted to a supervisory position and if he does not make good within a short time he is either demoted or fired outright. It is the writer's contention, however, that whenever this happens the management is guilty of one of two pos-

sible mistakes. Either it has failed to pick the right man, or a potential leader has been selected, but has received neither proper nor adequate training to fit him for the position. In either case a definite monetary loss has been sustained by the firm, and management has to chalk up another error.

Bad Bosses Drive Out Good Men

THERE is an axiom in financial circles to the effect that, as Gresham puts it, "Bad money drives out good money." This principle applies also to supervisors. Low grade bosses drive out high grade men who may be potential high grade bosses. To put the idea in another form, "like attracts like," and the mine which has the right type of men acting as bosses can generally always depend upon an adequate supply of good supervisory material to fill future requirements. In short, good management and good shift bosses attract good miners, and good miners, plus adequate training ordinarily make good bosses. This is not an infallible rule, but a certain amount of discrimination can make it reasonably reliable.

Quite often it seems apparent that management is too much inclined to treat the employees collectively instead of individually. Individual differences in ability and dependability, and all the other numerous human qualities and faults are apt to be overlooked. All men are not equally capable, nor are they of equal intelligence. When this truism is ignored it works to the disadvantage of both employer and employee. To disregard the individual differences in the employees and to treat them as a group is not only unwise, but is unscientific, and its faults outweigh its virtues so overwhelmingly that little can be said in favor of such a policy, except that, in a short-sighted sense, it is the easiest way to handle the situation.

Labor and Management Loyalty Both Possible

SOMETIMES a man's affiliation with, and loyalty to a labor organization is permitted to becloud the management's judgement of him as a worth-while employee and as potential supervisory material. Men can be loyal to a labor organization and loyal to their employers at the same time. Management should go out of its way, if necessary, to cultivate employee loyalty, if for no other reason than that it pays dividends. A great many mine owners and managers seem to be unaware of the fact that the more loyalty the management is qualified to receive from the employees, the less need there is for militant labor unions.

Management often prides itself on its "open door" policy in regards to employee grievances and criticisms. Many executives boast that the door to their office is always open to the men, however humble their position may be. It is easy to make such a statement, or to have it put up on the bulletin board, but the employees seldom invade the sanctum sanctorum of the "chief" unless they have been repeatedly urged to do so, and unless they feel sure that they are really welcome. If such a policy is not the genuine article it is analogous to an empty sample table in a business establishment bearing the sign "Free. Take One."

Help in Developing New Ideals

THE management of the mines should give serious consideration to the proven fact that the average employee will cooperate willingly, and as efficiently as possible, in putting over an idea or a program which he has either conceived or helped to formulate. When a new idea is "sprung" on the employees out of a clear sky, the natural reaction is often indifference, if not actual resentment. Because of this reaction, the idea must overcome a tremendous handicap if it is to succeed. If the same idea had originated within the ranks of the employees and/or they had helped to develop it, it would have a far better than average chance of succeeding.

The investors should be assured of a reasonable return on their investment, if humanly possible. The management should receive adequate remuneration. The customers should receive a satisfactory product at a fair price. The general public should feel that the industry, or the individual firm, is contributing its just share to the advancement of American civilization. And the employees should be assured of an opportunity to work and earn a decent living under conditions which are as favorable as possible. To this end, the workers should have a voice in all matters pertaining to employer-employee relations. They should have an opportunity to either accept or reject any proposed program which will affect them in any way. The opportunity should come while the idea is in the embryonic stage, instead of after it as been officially adopted by the management. Otherwise it comes mighty close to being paternalism or more or less benevolent dictatorship, depending upon the basic labor policy of the individual firm.

Criticism Should Be Free

EMPLOYEES should be as free to criticize management's actions as they are to criticize the actions of our government officials. Every citizen has the inherent right to criticize any public official from the coroner to the president without forfeiting his citizenship and being branded as a traitor. But how many employees can openly criticize the management without being classed as radicals and trouble-makers, or without being summarily discharged?

Perhaps the belief that the King can do no wrong may work out under absolute despotism, but in a free civilization there are no autocrats, and industrial executives not only can, but frequently do make mistakes. Working men who believe in the dignity of labor cannot long be satisfied with an existence in which they are free politically, and anything but free in an industrial sense. Our democratic ideals and practices should pervade all of our day to day activities. Labor should be able to criticize management without fear of industrial disfranchisement.

It must be added, by way of encouragement, that the very firms which try to apply democratic principles in their labor relations are the very firms whose employees have the least occasion for criticism. In such cases the democratic ideals already existed in the minds of the management. It remained only to give them definite form and substance.

Discipline by Consent

It is not the writer's contention that management should surrender its right to manage the business of the mines in the most efficient manner possible, and for the mutual benefit of all concerned. Every organization must have a head, or a governing body, and reasonable discipline must be maintained. But discipline is best secured through mutual consent, goodwill and cooperation. It must come from within. If any discipline on the part of the employees comes from an outside source it may actually indicate anything from indifference to actual timidity caused by unfair pressure from the supervisory staff.

Democracy in industry as a whole, and in the mining industry in particular, is not an impossible ideal. It can be applied to the mining industry, and when it is applied it will bring about a new concept of the dignity of labor as it is applied to the "mucker" and the miner. When all of our democratic ideals are given application in the mines the miner can at long last affirm that this is truly the "land of the free" and point to his workaday life as another proof of the verity of the affirmation.

If You Have an Employment Testing Program, or Think of Putting One in Do Not let it Become Static. Jobs in the Plant Change, the Educational Background of Applicants Changes, and New and Improved Tests are Constantly Being Developed.

Do Your Tests Pick Good Workers?

By Richard S. Solomon

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There are a group of very important factors which are often neglected, but which, in our opinion, must be continually kept in mind if an aptitude testing program is to accomplish its purpose. These factors may be classified roughly as the basis or background of psychological testing.

We believe that they have been neglected because we have been too much concerned with technical details, percentile rankings, critical scores, item analyses, techniques for ratings and other necessary factors which, because of the frequency of their occurrence and their direct application, have almost taken the place of more fundamental considerations.

End Result Should Be Prediction

The end result of an aptitude testing program, should not be the development of the test itself or a percentile ranking, or a critical score, or a rating. These factors are only tools or techniques. The only justification for their use, we believe, lies in the assistance they give us for *prediction. It is the ability to predict that is common to all types of scientific work.* If we are able to predict success or failure which any given individual is likely to attain in a specific position through aptitude testing, then aptitude testing is justified.

Likewise, if we are able to predict by any other method, whether it be in the realm of pseudo-science such as graphology, palmistry, phrenology, astrology or through sheer guess work, faith in human nature or intuition, these methods are justified to the extent that our prediction work out in actual experience. As far

as we know, however, these so-called pseudo-scientific methods do not give us a valid basis for prediction above chance.

In an attempt to explain the value of aptitude testing or prediction to a friend of mine recently, I used a very simple analogy from everyday life. I asked him whether he would be willing to predict that if he threw out of the window a heavy paper weight, which was resting on my desk, it would fall to the ground. In answer to this question, he said that it did not apply at all to aptitude testing because in the case of the paper weight we were dealing with "the scientific law of gravity."

In an hour of discussion, I think I was successful in convincing him that prediction in the case of aptitude testing and prediction of the case of the falling paper weight were both examples of an identical process. The only difference between the two lies in the *certainty* with which we would be willing to predict in either case.

Steps to Achieve Better Results

IF THIS is true it implies that there is much that can be done in aptitude and psychological testing to increase the certainty of our predictions. One of the most important changes that can take place has to do with the use and interpretation of our present norms or standards. There is a need for constant revision and restandardization.

Comparatively few users of psychological aptitude tests realize that the development of tests has come through the channels of formal education rather than through business. From the time of Binet, working in France at the turn of the century, to the present day, the vast majority of tests which are now in use were designed for educational purposes. The standards were, therefore, obtained on school children, this has been extended to include college students also, so that the college sophomore has served much more often as a guinea pig than the factory worker, clerk, salesman or executive. It is, therefore, no more than a point of logic that the predictive value of tests will be increased if they are restandardized for the particular situations in which they are to be used.

Battery of Tests Best

INCREASED predictability can also be attained if a testing program is built around a battery or series of tests instead of the use of one or two tests individually. There are at least two distinct reasons why the use of a complete battery of tests is desirable. In the first place, it is well known that by increasing the length of any test that is originally valid and reliable you almost automatically increase its predictive value. The same fact applies to a number of tests which are organized to comprise a specific battery. Although there will be much over-lapping between the factors which are measured by each individual test, the use of a number of independent tests related to

the specific position under consideration will tremendously out-weigh the value of any single test when used alone.

More important, however, is the fact that if a battery of tests is used, a pattern of test scores may be developed which will give an overall picture of the characteristics and abilities required for success on a particular job. The development of patterns has numerous advantages over the use of single test scores. It is always a combination of characteristics and abilities which point to success or failure rather than any one factor.

As one factor changes in an individual's make-up, many other characteristics change along with it so that the pattern is a truer picture of the individual. In addition, a pattern of test scores will help localize the difficulties which a particular individual is having, even though all of his other abilities make him well qualified for his position. In this way, in any individual, weakness may be overcome and areas of strength may be capitalized upon.

The psychologist who is an expert in interpretation of an individual's overall pattern or profile of characteristics and abilities will analyze it much in the same way that a physician diagnoses a disease entity in a patient. Fever symptoms are common to hundreds of different types of diseases. Likewise, low mental ability is common to many different types of difficulties encountered on the job. A physician must correlate many different symptoms along with a fever to determine whether his patient is suffering from pneumonia or scarlet fever. The remedy or treatment in each case will differ according to the diagnosis.

The same process may be used in diagnosing maladjustment on the job. Such factors as mental development, personality characteristics, social intelligence, mechanical ability and proficiency in handling detailed work must be considered as a total configuration or pattern, each factor may thus be related to all others. Then the proper course of action can be taken.

Some Fallacies of Statistics

After a series of tests has been developed and a pattern of test results has been obtained, it is the usual procedure to check upon the reliability and validity of these test findings. These procedures involve the knowledge and application of standard statistical methods. While a knowledge of statistics is almost indispensable when dealing with the development of a testing program and test results, very often much confusion, if not ignorance, is contained in statistical work. In this connection, it is advisable to point out that the use of statistics is merely a tool for prediction. Many errors have occurred through the wrong application of materials derived statistically. No matter what statistical procedures are used, whether they are the calculation of the average, a percentile ranking, an inter-quartile range, correlations or even regression equations, they must in turn be re-interpreted in terms of meaningful language in connection with the material which is being studied.

A simple illustration will serve to point out the danger of taking statistical data at face value. At one time the board of trustees of a large American medical school was considering the admission of women as students for the first time. There was a great controversy over this question, the board being equally divided pro and con so that final decision was delayed for at least a year. In the meantime, as an experiment, women were admitted as students for a trial period of one year. At the end of the year the subject arose once again for discussion.

Two for One

ONE member of the board had prepared some statistical evidence to show why it was not advisable to re-organize the medical school on a coeducational basis. In support of his contention he presented figures to show that during the one year trial period 50% of the women enrolled, married members of the faculty. He said that such a condition could not be tolerated as a permanent policy of the university. His colleagues on the board of trustees were inclined to agree with him, until one member asked how many women had been admitted to the medical school during the year.

It was revealed that only two women were enrolled in the school that year, and it was, therefore, not such an intolerable situation that one of them should have married a member of the faculty. The chances of this occurrence happening in future years was admittedly good; the chances of the proportion of 50% being maintained in future years were practically nil.

In general, for purposes of prediction it is advisable to use statistical procedures only when other methods will not give the desired results. In rechecking the validity and reliability of a psychological test in an aptitude testing program the results are more satisfactory if the test is checked against actual performance on the job rather than against other measures. For example, it has been a common practice to validate a new test against an older one. By validity, we usually mean that a test measures what it is supposed to measure. In other words, a test for clerical ability, if it is valid, measures a person's ability to do work of a clerical nature and no other type of activity such as mechanical, musical, artistic or literary.

Since many tests, especially the personality and temperament tests have not been validated except by use of other tests which are supposed to measure the same characteristic, any errors which occur in the first test are automatically perpetuated in the second one. If instead of this procedure the test is checked against actual behavior on the job, errors which are found to exist can be corrected. This procedure can apply to any field of activity and can also be used in connection with the establishment and re-checking of the reliability of the tests.

The Value of Negative Cases

BY RECHECKING the results of test predictions in this way, much more can be found out than through the use of statistics alone. One of the most valuable circumstances occurs when a negative case is found. A negative case is always a danger signal. It can be determined statistically that in 92 cases out of 100 a certain mechanical ability test will predict the likelihood of success of an individual for mechanical work. John Jones was tested and achieved a high ranking on the mechanical ability examination. Statistically there is no way of determining whether this one case, John Jones, comprised one of the 92 potentially successful cases or one of the eight potentially unsuccessful cases. The only way to determine this point is to check John Jones' performance on the job. He may be found to be one of the eight cases in 100 who is unsuccessful. If this is true, it is in many ways more valuable information than if Jones had been found to be successful. The reason is obvious. If enough of these negative cases are found, further study may be conducted in order to improve the test. The important point is that in aptitude testing negative results are some times just as important as positive results and should be recognized as such. The cases wherein aptitude testing has been found to fail, therefore, should not be used as a condemnation of testing, but rather as a point of departure for further constructive work.

The Value of Exceptional Cases

THERE is a tendency in most types of human activity to point out the exceptional case as a justification of either the use or disuse of aptitude testing as a permanent company policy. While extreme cases call attention to results obtained and are interesting examples, they neither prove or disprove anything. Whether an individual tested is an extreme case or not is purely a matter of chance.

The significance of extreme cases, however, lies in another fact. By an extreme case we mean one which deviates considerably above or below an average point or standard. In predicting the success or failure through aptitude testing of a worker on the job the well known concept of the normal probability curve is brought into play. Individuals who attain scores which lie at either extreme of this curve are those which deviate considerably from the average. The predictive value of a test result is directly connected with the degree to which one test score varies from the average. In other words, we can predict the success or failure of an extreme case with much more certainty than one that lies very close to the average.

There are many reasons for this, but the principle one lies in the fact that there are a lesser number of chance factors such as motivation, health, previous training and education, not measured by the tests which are likely to effect the individual, if he is an extreme case. Conversely if an individual attains only average scores on a battery of tests the likelihood that the test results are true measures of his character-

istics and abilities is very much reduced. It is, therefore, much easier to say with certainty that Mary Smith will do an excellent job as a private secretary on the basis of well above average test scores than it is to say that Jane Clark will do an average job in the same position on the basis of average test results.

Long Trend Upgrading Through Testing

THE advisability of making predictions from test results, however, on the basis of probability depends primarily upon the nature of the situation. If the situation demands the immediate hiring of 50, 100 or 500 men, let us say, machinist's apprentices, the chances may be 75 in 100 of securing well qualified apprentices. In other words, out of every 100 applicants tested who attain a score on a battery of psychological aptitude tests above the minimum critical standard, it can be predicted that 75 will respond to training, develop their basic skills, maintain a stable personality adjustment on the job, and eventually develop into expert machine operators. In such a case although there will be 25 other individuals who are hired and are found to be unsuccessful in their work, it can easily be demonstrated that this number of failures is far below those which would have occurred by use of other employment methods.

If over a long period of time, selection of new employees is based upon aptitude testing a gradual upgrading of the organization will occur. It may actually be a year or two before concrete evidence in the form of increased production, less turnover, more sales, and better individual relations are obtained. There even may be a conflict between this long term point of view and short term results. Business men, however, are fully aware that the prediction of a trend which will extend over a period of years is more reliable than the prediction of a single event which is likely to occur tomorrow or next week.

Nine Points on Testing

WE BELIEVE that the predictive value of aptitude testing in business can be increased if some of these methods are applied. As a summary of some of the methods suggested in the foregoing discussion, the following points may be included:

1. The ability to predict the success or failure underlies all work in the field of aptitude testing.

2. Tests should be restandardized for the particular situation in which they are to be used.

3. The predictive value of a battery of valid and reliable tests will outweigh the value of any single test when used alone.

4. A pattern of test scores is essential for increased predictability, and for taking the proper steps for individual control and self-improvement.

5. Statistical data obtained from test results must be re-interpreted in terms of meaningful language.

6. The validity and reliability of a scientific test should be established on the basis of actual performance on the job.

7. Negative or exceptional cases are of importance for learning more about the predictive value of test results.

8. Cases where extreme test results are obtained usually provide a more certain basis for prediction than cases based on average test results.

9. Predicting a trend over a long period of time is usually more successful than short term prediction. In this way, continual upgrading of personnel is possible.

If You Set a Time and Motion Study Man to Look at a Job being Done, and then to Set Up or Design Tests which Will Pick Good Employees for the Job, on the Principle that the Test Should be as Near Like the Job as Possible, What Luck Will You Have?

Job Tests

By Charles A. Drake

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If some men can do an industrial job better and faster than others, it is now possible to provide tests that will select the men who can do the job best. This is a strong statement, but it is justified by the results that have been obtained during the past few years. These results have been secured by making a sharp break with traditional methods and by drawing upon time and motion study techniques to furnish the basic data for the new approach. The new testing techniques have been developed in two quite different industries, and are now being applied in a third as part of a comprehensive personnel program.

Present Methods Costly

More than five years ago we started our first program of this type for the Eagle Pencil Company. We began with the usual equipment of pencil-and-paper tests, and a few standardized performance tests that were then obtainable. We were limited by our equipment and by the techniques that were available in the area called "industrial aptitude testing." It soon became apparent to us that our procedures were time-consuming, costly, and wasteful, and they might also properly be viewed as somewhat impractical, if not as academic and unrealistic.

In searching for new and better techniques we constructed a few tests requiring in their performance motor movements that more or less closely paralleled the movements of the worker at his work, that is, in which the operation cycle on the test embodied most, or all of the elements of the operation cycle on the job. From careful analysis of the results of these tests when applied to experienced operators, and to

new applicants we derived certain tentative principles of test design. These principles were verified in later experimentation.

It was discovered that a test which was quite adequate to select operators for a job involving only disparate hand and finger movements was totally inadequate and misleading when we attempted to use it to select operators for a job involving dual hand movements or for a job requiring hand-and-foot coordination. Such a test was even less helpful in selection for a job calling for inspection ability.

Special Tests Developed

As we uncovered the needs for measures of specialized abilities we attempted to design tests to meet these requirements. The final result was a battery of such special tests, including three for dual operation, one for hand-and-foot coordination, one for motor rhythm, two performance tests for inspection and one pencil-and-paper inspection test. This last test was a forerunner of much important work in the development of tests of the visual perceptual abilities that underlie successful inspection of a product.

Crude as these early efforts were, and handicapped as we were by wrong concepts—a heritage from academic psychology—the results were important for later work. Analysis of the results lead to the hypothesis that there must be many other undiscovered human motor and perceptual abilities that are directly related to success on jobs. They lead to the conclusion that the attempt to discover a single dexterity, or to construct a single test, that would cover a multitude of jobs was bound to be futile.

Less obvious, but extremely important, was the chance discovery during the subsequent analysis of the tests results that the tests also uncovered an innate accident-proneness in the operators. It was observed that when the level of performance on the inspection or perception tests was higher than the level of performance on the motor tests the employees were relatively free from accidents. When this situation was reversed there was a record of more and more severe accidents.

Accident Proneness Disclosed

This last discovery probably discloses, from the nature of the physiological mechanisms involved, a general principle that is applicable to automobile drivers, to airplane pilots and to all others whose occupations call for visual or other sensory responses accompanied by manual or motor adjustments of action or inhibition. It should now be relatively easy to set up adequate testing procedures to eliminate, or at least to give added attention to, the pilot predisposed to crash because of some innate physiological mechanism. That such accident-proneness is a fact and that it is innate can hardly be further doubted in the light of the findings of the British in-

vestigators. Whether it can be wholly, or even partially, overcome by training is doubtful, but the subject demands much further investigation.

The test development work begun for Johnson and Johnson at their New Jersey factories in 1939 and carried on there and at their new Chicago plants in 1940 provided an excellent opportunity to try out the new techniques. The first project called for selection methods for inspector-packers who were paced by machine production. Two special tests were designed, one for two-hand coordination with intervening one-hand elements and another for inspection by combined visual, tactual, and kinesthetic perception. In addition a revised pencil-and-paper visual perception test and the conventional telebinocular test of visual acuity were applied.

Tests for Dual Operations

SUBSEQUENT projects resulted in the development of tests for jobs requiring dual hand coordination, dual hand plus foot coordination, and several for bilateral or disparate hand operations. In addition to these a test was designed for selecting power sewing machine operators, another for foot press operators, and a third—a motor-driven test—for selecting machine tenders.

The sewing-machine test was designed to select candidates for training on power machines handling heavy canvas and webbing materials, rather than for selecting experienced operators who would normally be given a practical test on the machine. The test was necessarily left-handed, since the conventional sewing machine on this work gives something like a 15 per cent advantage to a left-handed operator, and left-handed dexterity therefore required emphasis. Speed in moving the pattern through the test and errors or deviations from the pattern, announced by buzzer signal, constituted the scores. This test, alone, was not a complete test for the job.

Foot Press Test

THE foot-press test presented a very short operation cycle in hand-and-foot coordination. It is usually not desirable to set up such a cycle on a production press for test purposes, due to the hazard of injury to a person not on the payroll and to the disturbing and distracting effects of the surroundings. This test, in common with all other tests, was made as completely safe as it was possible to design it.

The motor-driven test for machine operators embodied the characteristics inferred from a study of machine tending on a certain group of specially designed production machines in one of the plants. Such operators were required to replace six different rolls of material as these became exhausted, to watch for and reduce jams in the machine, to anticipate such jams by inference from observed defects in the materials, and to start and stop the machine as necessary.

The test, some two by three feet in size, consisted of two flags moving at different speeds around the outer edge of this area. The RED flag overtook and passed the

WHITE flag in some eleven turns, or in a period just under three minutes. At six points around the course of the flags there were contact areas two inches in length indicated by white strips. A flag on one area while another was on some other area, or both flags on the same area at the same time, would cause a light to flash in the center of the board. The flashing of this light could be prevented by pulling one of six switches that corresponded to the position of the RED flag, since each switch was connected to one contact area. Pulling the switch for the WHITE flag, or pulling the switch too late, or failing to pull the switch would permit the light to flash and thus score an error.

On this test, if no switches were pulled, the light would flash nineteen times per cycle. Consequently nineteen correct pulls, with no light flashing, would constitute a perfect score. Excess pulls—pulls not required—would count as errors. In correct operation the testee anticipated where contacts would occur and pulled the appropriate switch in time to prevent the flashing of the light. After demonstration and explanation the testee was given one, and if necessary two, practice cycles. At first three record cycles were scored, but later only two were taken when it was found that this was adequate.

Tests for Inspectors

From the study of the test results and of the performances of the hundreds of inspectors and operators selected by the tests in this company, certain additional conclusions are possible. It is clearly shown that inspection is a highly specialized process and must be tested for separately. It is also evident that an applicant high on one special ability, such as hand-and-foot coordination, but low on others may reflect no credit on the testing procedure if he is arbitrarily shifted by management to some other job for which he lacks basic ability.

This latter consideration implies that we are on safer ground, with the present level of managerial and supervisory competence, if we select only operators who are high on ALL measured abilities. The practical limitation on this is that we may not have enough applicants to make such rigorous selection possible. Eventually all new employees will be restricted in assignment to jobs for which they have outstanding abilities and kept off the unsuitable jobs. This is a problem of supervisory control.

Intelligence Test Results

At the instance of the Johnson and Johnson management we applied intelligence tests to several hundred applicants and old operators. The results were what was expected—no relation with scores on the performance tests and little with the perception tests. Stupid applicants usually make unsatisfactory operators on the

jobs and too intelligent operators soon quit. This statement sums up our opinion of the usefulness of intelligence tests in factory employment.

Foremen's rankings, output figures, and efficiency ratings by time study techniques were found to be unreliable and lacking in validity as measures of operator ability on the job. We have therefore proposed that test results be used as the criterion against which to measure the success of management, particularly of supervision, in releasing these measured abilities in production. Our success in predicting eventual level of production under favorable conditions of supervision and incentives is most encouraging.

The original work in perception begun in the Eagle testing was carried further during our three-year period of experimentation in the Bureau of Instructional Research of West Virginia University. Basic research in visual, tactual, and kinesthetic perception, including visual perception under varying speeds of presentation of the stimuli, varying lighting conditions, and varying distractions was undertaken and partially completed in spite of severe financial handicaps. Much of this can now be embodied in tests for industrial selection, for safety testing, and for other personnel measurement purposes. It has been conclusively demonstrated that good vision is no guarantee of good perception and that certain visual defects are no handicap in some jobs calling for limited visual performance.

Tests in Textile Industry

IT MAY be well to summarize, at this point, how these developments bear upon the present extensive project in the textile industry. While it must be conceded that this industry does not offer as great an opportunity as do certain other industries for the full further development of industrial selection techniques, it has unique problems the solutions for which are urgently necessary.

The techniques are ready to hand for selecting those with the basic abilities required for weaving and for operating spinners, warpers, slashers, and other preparatory machinery. We can readily set up selection techniques for inspectors and other employees of the cloth room. We can proceed to design tests for loom fixers and for fixers on other textile machinery, with every assurance of success.

Our knowledge of perception makes it possible to set up tests for color vision, for color discrimination, and for color matching. The way is clear to develop objective measures for "hand," an area heretofore almost wholly subjective, although the design of suitable tests will require much further experimentation.

It is not intended to imply that we draw solely upon our own experimental results for guidance in this effort. Many other investigators have contributed much that is of value. Unfortunately, a large amount of such work has been performed only for research purposes and has limited application in the practical work of employee selection.

Industrial Engineers Used

As a matter of policy, we have found it desirable to allocate the design, construction, and interpretation of performance tests as a function of industrial engineering rather than of psychology. This policy has been established on the basis of our experience that it is easier to train industrial engineers in the limited statistical techniques required than to find persons with extensive psychological training who also have adequate knowledge of time study techniques and machine design. Conventional developments and applications of pencil-and-paper testing techniques will continue to be carried on under the psychological and personnel functions.

Just why Federal government agencies, particularly the Army and Navy, have not undertaken energetically the development of this line of testing is not wholly clear. Certainly the selection of the best and most easily trained personnel to operate rangefinders and guns and the dozens of other pieces of specialized optical and mechanical equipment is most important in a time of national emergency. Perhaps the explanation is to be found in the fact that testing activities under government auspices are largely in the hands of persons with a predisposition to interviewing and pencil-and-paper test techniques. Lack of familiarity with time and motion study practices may explain this current blindness to the benefits that may be secured from performance testing of the type we have developed. The condition may be only temporary, awaiting the impetus that may be furnished by work of comparable nature in industry. Fortunately, such work is in progress.

Book Reviews

Book Review Editor, Mr. Everett Van Every

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JOB EVALUATION AND MERIT RATING

By Eugene J. Benge. New York, National Foremen's Institute, Inc: 1941. 103 pp. Price $7.50

Reviewed by J. M. Telford

Mr. Eugene J. Benge's new manual expounding the ever increasingly important subjects "Job Evaluation And Merit Rating" is worthy of the study of anyone who contemplates either a plan of job evaluation or merit rating. His discussion of these subjects reads like it was written by one experienced in meeting such problems.

Job Evaluation

In his paragraph on "Job Evaluation is Relative," Mr. Benge makes it very clear that rate relationships affect employee contentment; that the pressure of rate influence is strongest within its natural organizational boundaries. This is important as it points to the job that should be done first, i.e., the determination of sensible rate relationships within a natural bargaining unit whether the unit envelops a wide or a narrow geographical area.

Very wisely Mr. Benge cautions against the dangers in three commonly used methods, the "Job Ranking Method," the "Predetermined Grading Method," and the "Point System." But he indicates that in spite of their failing, these methods have served many a good purpose, for any method if applied judiciously, will probably do a better job of relating rates than by decreeing, or straight bargaining for wages, or by setting incentive standards with the expectation that high earnings from incentives cover up inequalities in the basic wage.

Mr. Benge suggests the use of the "Factor Comparison Method" of job evaluation as being flexible and is one which tends to limit the use of personal opinion. By avoiding so far as possible a dependence upon personal opinion, the influence of human error and pressure methods is greatly reduced.

Mr. Benge emphasizes the importance of listing job specifications carefully because they are the basis of the analysis, as well as a dependable record for future reference when it is necessary to provide new rates for new duty combinations or for expanding or contracting responsibilities.

The author's method of weighing specifications in order to rank jobs within groups according to factors is sound, for specifications describe the job as to skills, responsibilities and working conditions, and without a careful consideration of specifications, a reasonable rate comparison can hardly be made.

Mr. Benge's manual does not provide a plan of job evaluation which is ready for

use by anyone who wishes to evaluate jobs. It is a guide as to principles which can be very largely accepted as fundamental.

Merit Rating

In the Merit Rating section of the author's manual he outlines the possible uses of job specifications for merit rating purposes under the man-job plan.

He first proposes to use job specifications to describe the kind of an individual needed to fill the job. There are two purposes in seeking the right individual for the job; one is its importance to the business, and the other concerns the contentment of the employee.

The author next proposes to use job specifications to guide both the employer and the employee in a training program. It is, of course, necessary for the employer to be aware of the employee's needs if he is to give him the help required for continuous improvement.

The third feature of the author's plan of rating possibilities is to match the job requirements against the individual's qualifications to determine if the employee is fitted to the job. Likewise, use can be made of the same data for promotional and guidance purposes.

Like the preceding section of Mr. Benge's manual, the Merit Rating section does not outline a plan which can be put to use immediately. But he does suggest the direction one's thinking might well take in Merit Rating, particularly if a Job Evaluation program has previously been undertaken.

DESIGN FOR INDUSTRIAL COORDINATION

By Robert W. Porter. New York: Harper & Brothers. 1941. 249 pp. $3.00

Reviewed by Book Review Editor

In the words of the author the purpose of this book is to describe how and why the processes of business unite to form a balanced unit of production. He discovers a common fundamental resemblance in problems of administrative practice and points out common characteristics that are not only the differences in form of organization and the pecularities of various enterprises, but are frequently the differences of executive opinion concerning the best method of securing what he calls "functional integration."

It is pointed out that companies frequently suffer from degenerative processes and then hope that time alone will correct the condition, clinging to secrecy as an antidote. The simple solution would seem to be that when we get the system of checks and balances so designed that each factor functions at its fullest power, and in no way impairing the other factors from giving out their fullest powers, then the design of coordination is complete.

By this time we have reached the middle of the text. The project is interesting

and worthy of careful exploring. But the reader is exhausted at this point. He's waist-deep in the wordiest managerial verbiage he would ever want to see. And the surprise is that a management consultant would feel disposed to dress up his wares in almost over-bearing terminology. For instance, as if to justify his style, we find this explanation:

> "Our object in drawing a synthetic word picture or industrial coordination, in terms of its constituent organizational activities, was to show the manner in which the intrinsic character of industrial organization is subject to the technical (policy-performance-appraisal), jurisdictional (administration-management-operation) and functional (planning-production-inspection) processes of coordination and how the distinctive activities of an organization are accelerated or retarded according to the manner in which they are classified and integrated."

But for all its wordiness, the work has many compensating qualities. The author, as a management consultant, has probably lifted much of his field experience for this book. Chapters on Technical Design and Applying Technical Design are good contributions for executive thinking. They discuss the application of the human element and the traits of successful management in the huge field of management coordination.

If you would continue your advanced study into the theory and practice of management, you will enjoy this book. There is good experience and counsel in its pages (whether or not you have ever had occasion to engage a management consultant) and it may give you some insight into how one man at least goes about analyzing the organic functions of business administration.